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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,156	04/08/2004	Ko-Pin Chang	24061.83 (TSMC2003-0893)	9194
42717	7590	07/21/2005	EXAMINER	
HAYNES AND BOONE, LLP 901 MAIN STREET, SUITE 3100 DALLAS, TX 75202			VON BUHR, MARIA N	
			ART UNIT	PAPER NUMBER
			2125	

DATE MAILED: 07/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/821,156

Applicant(s)

CHANG ET AL

Examiner

Maria N. Von Buhr

Art Unit

2125

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 and 25-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 and 25-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. Examiner acknowledges receipt of Applicant's response to the previous Office action, received 02 May 2005; which cancels claims 23 and 24, and amends claims 1, 6-9, 11, 15, 16, 21, 22 and 25-28. Claims 1-22 and 26-29 are now pending in this application.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. In response to Applicant's amendment, the 35 U.S.C. §112, second paragraph, rejection of the claims is deemed to have been overcome and is, therefore, withdrawn.

4. In response to Applicant's amendment and remarks, concerning the 35 U.S.C. §102(e) rejection of claims 1, 10, 11, 16, 19 and 29, as being clearly anticipated by Chen et al. (U.S. Patent No. 6,821,891), Examiner notes the following:

a. As presented in the previous Office action, Chen et al. discloses "deposition methods for forming thin metal films, such as copper films, on substrates for use in manufacturing semiconductor devices, flat-panel display devices, and other electronic devices" (col. 1, lines 14-18), including automated control of nitrogen gas purging devices in a wafer/semiconductor manufacturing environment (see at least, col. 7, line 64 - col. 8, line 17; col. 8, line 63 - col. 9, line 3).

b. As per the claims, as instantly amended, Applicant argues that "Chen fails to disclose a stocker or overhead buffer having a gas purge device" (pages 7-8 of the instant response).

c. As per claims 11, 16, 19 and 29, as instantly amended, this argument is persuasive, hence the rejection of these claims under 35 U.S.C. §102(e), as being clearly anticipated by Chen et al., is deemed to have been overcome and is, therefore, withdrawn.

d. As per claims 1 and 10, as instantly amended, this argument is not persuasive, because the instant claim language does not support Applicant's argument. In particular, claim 1 provides for "at least one process intermediate station ... at least one" of which "is one of a stocker and an overhead buffer (OHB) ... wherein the gas purge device is included in at least one of the at least one process intermediate station." In the circumstance when there are two stations, for example, this particular claim language only requires that a first station be either a stocker or an OHB, and a second station include a gas purge device. Hence, there is no clear support in the claim language for the argument that a stocker or an overhead buffer include a gas purge device. In other words, the limitations on which Applicant relies are not stated in the claims. Therefore, it is irrelevant whether the reference includes those features or not.

e. However, Examiner additionally notes that Chen et al. does not specifically provide for either a stocker or OHB as one of the devices. In this regard, Chen et al. does specify that the “processing chamber 200 may be integrated into an integrated processing platform, such as an Endura™ platform also available from Applied Materials, Inc.” (col. 5, lines 11-14), details of which were incorporated by reference. Such a platform inherently utilizes transfer stations, such as stockers, buffers and FOUPs (see for example, Vepa et al. (U.S. Patent Application Publication No. 2001/0027082 and U.S. Patent No. 6,852,012), Jevtic et al. (U.S. Patent Nos. 6,519,498 and 6,224,638) and Venkatesh et al. (U.S. Patent No. 6,074,443); all newly cited). Therefore, Chen et al. inherently provides for the presence of such transfer stations.

f. Accordingly, claims 1 and 10 stand rejected under 35 U.S.C. §102(e), as being clearly anticipated by Chen et al. (U.S. Patent No. 6,821,891). Additionally, claims 6-8 are now rejected under 35 U.S.C. §102(e), as being clearly anticipated by Chen et al. (U.S. Patent No. 6,821,891), also.

5. In response to Applicant’s amendment and remarks, concerning the 35 U.S.C. §102(b) rejection of claims 1, 8-11, 16, 19 and 29, as being clearly anticipated by Iwata et al. (U.S. Patent No. 6,297,114), Examiner notes the following:

a. As presented in the previous Office action, Iwata et al. disclose a process and apparatus of fabricating a semiconductor, including the use of automated control of chambers within the fabrication line, wherein those chambers include nitrogen gas purging chambers, and loadlock and transfer chambers (see at least, col. 1, lines 39-63; col. 11, lines 31-68; col. 13, line 33 - col. 14, line 60).

b. As per the claims, as instantly amended, Applicant argues that “Iwata fails to disclose a stocker or overhead buffer having a gas purge device” (pages 8-9 of the instant response).

c. As per claims 9, 11, 16, 19 and 29, as instantly amended, this argument is persuasive, hence the rejection of these claims under 35 U.S.C. §102(b), as being clearly anticipated by Iwata et al., is deemed to have been overcome and is, therefore, withdrawn.

d. As per claims 1, 8 and 10, as instantly amended, this argument is not persuasive, because the instant claim language does not support Applicant’s argument. In particular, claim 1 provides for “at least one process intermediate station ... at least one” of which “is one of a stocker and an overhead buffer (OHB) ... wherein the gas purge device is included in at least one of the at least one process intermediate station.” In the circumstance when there are two stations, for example, this particular claim language only requires that a first station be either a stocker or an OHB, and a second station include a gas purge device. Hence, there is no clear support in the claim language for the argument that a stocker or

an overhead buffer include a gas purge device. In other words, the limitations on which Applicant relies are not stated in the claims. Therefore, it is irrelevant whether the reference includes those features or not.

e. However, Examiner additionally notes that Iwata et al. does not specify that the disclosed load-lock chambers are necessarily either a stocker or OHB. In this regard, similarly as presented in the previous Office action, with regard to claims 6 and 7, Huang et al. (U.S. Patent No. 6,597,964) disclose the well-known use of various transfer carriers within a semiconductor fabrication facility (see at least, col. 5, lines 37-53), while Wehrung et al. (U.S. Patent Application Publication No. 2002/0164242) disclose a “control system for transferring and buffering material in a material transport system. A transport system and method for moving an article between a conveyor and a workstation. A robot works in conjunction with transportation buffer control system to move Pods between storage shelves, load ports and I/O ports without intervention of the material handling controller. The robots include vertical movement mechanisms and horizontal movement mechanisms together with gripping devices to handle the Pods. Movement of Pods between storage shelves, load ports and I/O ports is seen as a single activity by the material control system” (the abstract), including the well-known use of various transfer carriers and MCS in a semiconductor fabrication facility (see at least, paragraph 0017). It would have been obvious, to one having ordinary skill in the art, at the time the instant invention was made, to utilize such transfer carriers in the system of Iwata et al., because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

f. Accordingly, claims 1, 6-8 and 10 now stand rejected under 35 U.S.C. §103(a), as being unpatentable over Iwata et al. (U.S. Patent No. 6,297,114) in view of Huang et al. (U.S. Patent No. 6,597,964), and claims 1, 2, 6-8 and 10 now stand rejected under 35 U.S.C. §103(a), as being unpatentable over Iwata et al. (U.S. Patent No. 6,297,114) in view of Wehrung et al. (U.S. Patent Application Publication No. 2002/0164242).

6. The 35 U.S.C. §103(a) rejection of claims 18 and 20-22, as being unpatentable over either Chen et al. or Iwata et al., as applied to claim 16 above, further in view of Wehrung et al., is deemed to have been overcome and is, therefore, withdrawn, since the argument concerning parent claim 16, noted above, was found to be persuasive.

7. In response to Applicant’s amendment and remarks, concerning the 35 U.S.C. §103(a) rejection of claims 3-5, 12-15, 17 and 25-28, as being unpatentable over either Chen et al. (U.S. Patent No. 6,821,891) or Iwata et al. (U.S. Patent No. 6,297,114), as applied to claims 1, 11 and 16 above, further in view of Pasadyn et al. (U.S. Patent No. 6,678,570), Examiner notes the following:

a. As presented in the previous Office action, Pasadyn et al. disclose a “method for determining output characteristics of a workpiece includes generating a tool state trace related to the processing of a workpiece in a tool; comparing the generated tool state trace to a library of reference tool state traces, each reference tool state trace having an output characteristic metric; selecting a reference tool state trace closest to the generated tool state trace; and determining an output characteristic of the workpiece based on the output characteristic metric associated with the selected reference tool state trace. A manufacturing system includes a tool and a tool state monitor. The tool is adapted to process a workpiece. The tool state monitor is adapted to generate a tool state trace related to the processing of a workpiece in the tool, compare the generated tool state trace to a library of reference tool state traces, each reference tool state trace having an output characteristic metric, select a reference tool state trace closest to the generated tool state trace, and determine an output characteristic of the workpiece based on the output characteristic metric associated with the selected reference tool state trace” (the abstract), in a semiconductor fabrication facility, including the well-known use of MES to schedule processes using various identification elements (see at least, col. 1, line 28 - col. 2, line 25; col. 3, line 54 - col. 4, line 34). It would have been obvious, to one having ordinary skill in the art, at the time the instant invention was made, to utilize such an operating system in the systems of either Chen et al. or Iwata et al., because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

b. In this regard, Applicant has simply repeated the above-noted argument, that neither Chen et al. nor Iwata et al. teach “a stocker or overhead buffer having a gas purge device” (pages 11-12 of the instant response).

c. As noted above, as per parent claims 11 and 16, this argument was found to be persuasive. Accordingly, the 35 U.S.C. §103(a) rejection of claims 12-15, 17 and 25-28, as being unpatentable over either Chen et al. or Iwata et al., as applied to claims 11 and 16 above, further in view of Pasadyn et al., is deemed to have been overcome and is, therefore, withdrawn.

d. Further as noted above, as per parent claim 1, this argument was found not to be persuasive. Accordingly, claims 3-5 stand rejected under 35 U.S.C. §103(a), as being unpatentable over Chen et al. (U.S. Patent No. 6,821,891), as applied to claim 1 above, further in view of Pasadyn et al. (U.S. Patent No. 6,678,570), and as being unpatentable over Iwata et al. (U.S. Patent No. 6,297,114) in view of either Huang et al. (U.S. Patent No. 6,597,964) or Wehrung et al. (U.S. Patent Application Publication No. 2002/0164242), as applied to claim 1 above, further in view of Pasadyn et al. (U.S. Patent No. 6,678,570).

8. The 35 U.S.C. §103(a) rejection of claims 20-22, as being unpatentable over either Chen et al. or Iwata et al., as applied to claim 16 above, further in view of Huang et al., is deemed to have been overcome and is, therefore, withdrawn, since the argument concerning parent claim 16, noted above, was found to be persuasive.

9. Claims 1, 6, 9-11, 16, 19, 21 and 29 are rejected under 35 U.S.C. §102(b) as being clearly anticipated by Hanak (U.S. Patent No. 4,593,644; newly cited), which discloses a “continuous, in-line deposition system ... for coating large substrates. The apparatus includes load-lock chambers for loading and unloading substrates arranged in carriers” (the abstract), wherein substrates on a carrier are loaded into processing chambers for deposition, through a cavity 40 and a subchamber 44 used as a buffer compartment (analogous to the instantly claimed “stocker”), in which gas purging is performed (see at least, Fig. 2, with associated text; col. 1, line 10 - col. 2, line 22; col. 7, lines 5-23; col. 9, lines 17-23 and 53-56).

10. Claims 2 and 18 are rejected under 35 U.S.C. §103(a), as being unpatentable over Hanak (U.S. Patent No. 4,593,644), as applied to claims 1 and 16 above, further in view of Wehrung et al. (U.S. Patent Application Publication No. 2002/0164242).

Similarly as presented in the previous Office action, Wehrung et al. disclose a “control system for transferring and buffering material in a material transport system. A transport system and method for moving an article between a conveyor and a workstation. A robot works in conjunction with transportation buffer control system to move Pods between storage shelves, load ports and I/O ports without intervention of the material handling controller. The robots include vertical movement mechanisms and horizontal movement mechanisms together with gripping devices to handle the Pods. Movement of Pods between storage shelves, load ports and I/O ports is seen as a single activity by the material control system” (the abstract), including the well-known use of various transfer carriers and MCS in a semiconductor fabrication facility (see at least, paragraph 0017). It would have been obvious, to one having ordinary skill in the art, at the time the instant invention was made, to utilize such transfer carriers in the system of Hanak, because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

11. Claims 3-5, 12-15, 17 and 25-28 are rejected under 35 U.S.C. §103(a), as being unpatentable over Hanak (U.S. Patent No. 4,593,644), as applied to claims 1, 11 and 16 above, further in view of Pasadyn et al. (U.S. Patent No. 6,678,570; previously presented).

Similarly as presented in the previous Office action, Pasadyn et al. disclose a “method for determining output characteristics of a workpiece includes generating a tool state trace related to the processing of a workpiece in a tool; comparing the generated tool state trace to a library of reference tool state traces, each reference tool state trace having an output characteristic metric; selecting a reference tool state trace closest to the generated tool state trace; and determining an output characteristic of the workpiece based on the output characteristic metric associated with the selected reference tool state trace. A manufacturing system includes a tool and a tool state monitor. The tool is adapted to process a workpiece. The tool state monitor is adapted to generate a tool state trace related to the processing of a workpiece in the tool, compare the generated tool state trace to a library of reference tool state traces, each reference tool state trace having an output characteristic metric, select a reference tool state trace closest to the generated tool state trace, and determine an output characteristic of the workpiece based on the output characteristic metric associated with the selected reference tool state trace” (the abstract), in a semiconductor fabrication facility, including the well-known use of MES to schedule processes using various identification elements (see at least, col. 1, line 28 - col. 2, line 25; col. 3, line 54 - col. 4, line 34). It would have been obvious, to one having ordinary skill in the art, at the time the instant invention was made, to utilize such an operating system in the system of Hanak, because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

12. Claims 20 and 22 are rejected under 35 U.S.C. §103(a), as being unpatentable over Hanak (U.S. Patent No. 4,593,644), as applied to claim 16 above, further in view of Chen et al. (U.S. Patent No. 6,821,891; previously cited).

As noted above, Chen et al. does not specifically provide for either a stocker or OHB as one of the devices. In this regard, Chen et al. does specify that the “processing chamber 200 may be integrated into an integrated processing platform, such as an Endura™ platform also available from Applied Materials, Inc.” (col. 5, lines 11-14), details of which were incorporated by reference. Such a platform inherently utilizes transfer stations, such as stockers, buffers and FOUPs (see for example, Vepa et al. (U.S. Patent Application Publication No. 2001/0027082 and U.S. Patent No. 6,852,012), Jevtic et al. (U.S. Patent Nos. 6,519,498 and 6,224,638) and Venkatesh et al. (U.S. Patent No. 6,074,443); all newly cited). Therefore, Chen et al. inherently provides for the presence of such transfer stations in a semiconductor manufacturing line. It would have been obvious, to one having ordinary skill in the art, at the time the instant invention was made, to utilize such elements in the system of Hanak, because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.



13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. §103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR §1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. §103(c) and potential 35 U.S.C. §102(e), (f) or (g) prior art under 35 U.S.C. §103(a).

14. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure. Applicant is advised to carefully review the cited art, as evidence of the state of the art in gas purging stockers and buffer devices, in preparation for responding to this Office action.

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP §706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR §1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR §1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria N. Von Buhr whose telephone number is 571-272-3755. The examiner can normally be reached on M-F (9am-5pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on 571-272-3749. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Maria N. Von Buhr  
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